

U.S. Serial No. 10/753,000
Filed January 5, 2004
Thomas E. Harbin et al.

Remarks

Claims 1-25 are currently pending in the present patent application. Claims 1, 7, 9, 15, 18 and 24 have been amended.

I. Introductory Remarks

Applicants' counsel appreciates the time and courtesy extended by Examiner Mitchell to the undersigned during an in person interview held on June 15, 2005 at the U.S. Pat. Office with regard to the present patent application. At the interview, Ruhl (U.S. Pat. No. 4,472,096) was discussed and the differences between the Ruhl patent and the independent claims of the present invention were discussed.

Specifically, Applicant's counsel stated that Ruhl was representative of the prior art approach of designing a swage type fastener that is capable of performing in only one application (e.g., a shear application). Ruhl does not discuss the performance of that lockbolt in a plurality of applications. Ruhl teaches away from swaging collars of different materials into the lock grooves of the pin member. See column 4, lines 34-39 of the Ruhl reference where swaging materials of excessive strength (e.g., titanium alloys or stainless steel alloys) damages the pin member.

Applicant's counsel indicated that one of the inventive aspects of the present invention was that the fastener provided satisfactory clamp and tensile loads and resistance to failure to secure a fastened joint together in a plurality of applications whereas Ruhl was designed to perform in one application. Examiner Mitchell suggested amending the independent claims to indicate that the lock grooves of the present invention hold different materials to further distinguish over the Ruhl patent. Agreement was not reached on the proper scope of the claims.

U.S. Serial No. 10/753,000
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II. Specification

The abstract of the disclosure was objected to because it was over 150 words long.

Correction was made by deleting two (2) sentences from the abstract of the disclosure.

Reconsideration and withdrawal of the objection to the abstract of the disclosure is requested.

III. Claim Objections

Claims 7, 15 and 24 were objected to because the claims were alleged to not be clear on how many or which of the alternatives were required. While Applicants believe that the Markush clause was properly worded in these claims, claims 7, 15 and 24 have been amended to use traditional Markush type language in the format of "selected from the group consisting of A, B and C" in an effort to be consistent with the traditional Markush type language that was used in the independent claims from which these dependent claims depend. In claims 7 and 24, the claims refer to a plurality (2 or more) applications selected from the group consisting of shear, shear/tension, shear composite and shear/tension composite applications. The 2 or more applications could be any of these enumerated applications. In claim 15, the claim refers to 3 or more applications selected from the group consisting of shear, shear/tension, shear composite and shear/tension composite applications. The 3 or more applications could be any of these enumerated applications. Reconsideration and withdrawal of the objection to the Markush language presented in claims 7, 15 and 24 is requested.

IV. Claim Rejections – 35 USC § 112

Claims 1-25 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner has alleged that Applicants are claiming a swage type fastener comprising a pin and a collar with additional claim limitations including requirements for

U.S. Serial No. 10/753,000
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comparisons of multiple pins in multiple applications, which are not claimed. Applicants disagree with this rejection of the claims.

In response, Applicants will focus on independent claims 1, 9 and 18 with regard to this rejection of the claims since these are the claims containing the elements of a pin and a collar that were identified as problematic by the Examiner. Specifically, Applicants have amended claims 1, 9 and 18 to positively recite that the lock grooves are filled with any one of the different collar materials in an effort to claim the present invention with more clarity as suggested by the Examiner during an interview that was held with the undersigned on June 15, 2005.

In essence, Applicants are claiming: (i) a pin selected from a plurality of pin members of different diameters wherein the pin has a uniform lock groove and crest geometry for each pin diameter; and (ii) a collar selected from a plurality of collars of different materials with the collar swaged into the lock grooves whereby workpieces are adequately secured together in a plurality of applications having different load requirements with the lock grooves being filled with any one of the different materials. The preceding sentence concisely recites the essence of the present invention and claims 1, 9 and 18 particularly point out and distinctly claim this subject matter. Also, the length of the lock grooves and the length of the crests are dictated by the applications which are positively being claimed in claims 1, 9 and 18. The applications are defined as being selected from the group consisting of shear, shear/tension, tension, shear composite, shear/tension composite and tension composite applications. See, the end of clause (c) in claims 1, 9 and 18. The Examiner has objected to the length of the lock grooves and the length of the crests being defined by a shear application or a tension application. There is nothing fundamentally wrong by casting claims 1, 9 and 18 in this manner though.

U.S. Serial No. 10/753,000
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For example, in the case In re Swinehart and Sfiligoi, 169 USPQ 226, 228 (CCPA 1971), the Court recognized "the practical necessity for the use of functional language." The Court held that there is nothing intrinsically wrong with attempting to define something by what it does rather than by what it is. The Court went further by stating that "there is no support, either in the actual holdings of prior cases or in the statute, for the proposition, put forward here, that "functional" language, in and of itself, renders the claim improper." In the case In re Schreiber, 128 F.3d 1473, 1478 (Fed. Cir. 1997), the Court stated that "[a] patent applicant is free to recite features of an apparatus either structurally or functionally."

As such, Applicants believe that the use of some functional language in the claims to define the apparatus of the present invention is proper. Furthermore, claims 1, 9 and 18 define the swage type fastener by structure and function. Specifically, with regard to the Examiner's objection to the length of the lock grooves and the length of the crests being defined by a shear application or a tension application, Applicants believe defining the length of the lock grooves and crests in this manner is appropriate based on the reasoning of the Federal Circuit in the Schreiber case..

The Examiner has expressed concern over the use of certain language characterized as "intended use" language. Applicants respectfully submit that the language selected for the claims are structural limitations that define how the parts are interconnected in the final assembly. See, In re Venezia, 189 USPQ 149 (CCPA 1976). Unlike the claims found in the case In re Collier, 158 USPQ 266 (CCPA 1976), Applicants' claim language is neither futuristic nor conditional. Some of the language used in the claims is functional language, not "intended use" language, and is patentable because it defines some of the claimed elements in terms of what it does. MPEP 2173.05(g) clearly states that it is acceptable to use functional limitations in a claim to define over

U.S. Serial No. 10/753,000
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prior art. Reconsideration and withdrawal of the rejection under 35 USC 112, second paragraph is requested.

V. Claim Rejections – 35 USC § 102 and 35 USC § 103

Claims 1-2, 5-7, 9-10, 13-15, 17-19 and 22-24 were rejected under 35 USC 102(b) as being anticipated by Ruhl. Claims 3-4, 8, 11-12, 16, 20-21 and 25 were rejected under 35 USC 103(a) as being unpatentable over Ruhl as well. Applicants disagree with these rejections of the claims.

Applicants will focus on independent claims 1, 9 and 18 in distinguishing these patents from the present invention. As discussed below, it is respectfully requested that the §102(b) and §103(a) rejection be withdrawn since Ruhl does not anticipate all of the features of claims 1, 9 and 18 and does not render claims 1, 9 and 18 obvious.

Turning to the merits of the case, Applicants are claiming: (i) a pin selected from a plurality of pin members of different diameters wherein the pin has a uniform lock groove and crest geometry for each pin diameter; and (ii) a collar selected from a plurality of collars of different materials with the collar swaged into the lock grooves whereby workpieces are adequately secured together in a plurality of applications having different load requirements with the lock grooves being filled with any one of the different materials. Conversely, the Ruhl reference is readily distinguishable from the approach of the present invention.

Ruhl is representative of the prior art approach of designing a swage type fastener that is capable of performing in only one application (e.g., a shear application) for securing metal plates together. Ruhl does not discuss the performance of that lockbolt in a plurality of applications. Ruhl teaches away from swaging collars of different materials into the lock grooves of the pin member. See column 4, lines 34-39 of the Ruhl reference where swaging materials of excessive

U.S. Serial No. 10/753,000
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strength (e.g., titanium alloys or stainless steel alloys) damages the pin member. To highlight the differences between Ruhl and claims 1, 9 and 18 of the present patent application, these claims were amended to recite that the collar of the present invention is swaged into the lock grooves whereby the workpieces are adequately secured together in a plurality of applications having different load requirements with the lock grooves being filled with any one of the different materials of the collars. The applications are defined as being selected from the group consisting of shear, shear/tension, tension, shear composite, shear/tension composite and tension composite applications.

Ruhl does not adequately secure workpieces together in a plurality of applications. Ruhl makes this clear by indicating that the Ruhl pin will be damaged during swage if the collar is of excessive strength (e.g., titanium alloys or stainless steel alloys). See, column 4, lines 34-39 of the Ruhl patent. As the Examiner notes, Ruhl does discuss shear and tension loading of the Ruhl fastener. See, column 3, lines 31 to column 4, line 38. This reference by Ruhl is directed to the method of designing the Ruhl fastener not the performance of the Ruhl fastener in having a collar swaged into the lock grooves of the Ruhl fastener to adequately secure workpieces together in a plurality of applications having different load requirements with the lock grooves being filled with any one of the different materials of the collars. Ruhl is inadequate for performing in a plurality of applications. From the discussion above, it is clear that Ruhl does not anticipate, teach nor reasonably suggest these features of claims 1, 9 and 18.

Also, claim 1 of the present invention differs from Ruhl in that Ruhl does not anticipate, teach nor reasonably suggest that the width of the lock grooves in the tension application is not greater than ten percent of the width of the lock grooves in the shear application. Ruhl does not have any disclosure reading on this feature of claim 1.

U.S. Serial No. 10/753,000
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Additionally, claim 9 of the present invention differs from Ruhl in that Ruhl does not anticipate, teach nor reasonably suggest a collar being swaged into the lock grooves whereby workpieces are adequately secured together in three or more applications having different load requirements with the lock grooves being filled with any one of the different materials. The applications are defined as being selected from the group consisting of shear, shear/tension, tension, shear composite, shear/tension composite and tension composite applications. Ruhl does not have any disclosure reading on this feature of claim 9.

Furthermore, claim 18 of the present invention differs from Ruhl in that Ruhl does not anticipate, teach nor reasonably suggest the lock grooves being provided with the longest width required for collars of lower strength for a shear application and the crests being provided with the longest width required for collars of greater strength for a tension application whereby the fastener provides satisfactory clamp and tensile loads and resistance to failure to secure a fastened joint together in a plurality of applications having different load requirements with the lock grooves being filled with any one of the different materials of the collars. Ruhl does not have any disclosure reading on this feature of claim 18.

The surprising or unexpected result of the present invention is that each pin selected from a plurality of pin members of different diameters is given a uniform lock groove and crest geometry for each pin diameter, wherein the uniform lock groove and crest geometry has the ability to provide the fastener with satisfactory clamp and tensile loads and resistance to failure to secure a fastened joint together in a plurality of applications having different load requirements with the lock grooves being filled with any one of the different materials of the collars. The uniform lock groove and crest geometry that is established for each pin size allows the pin of the selected diameter to be manufactured from common tooling that is used to cut the pin.

U.S. Serial No. 10/753,000
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In view of the foregoing, claims 1, 9 and 18 are considered allowable. Since independent claims 1, 9 and 18 are considered allowable by Applicants as discussed herein, dependent claims 2-8, 10-17 and 19-25 are also considered allowable as well. Reconsideration and withdrawal of the rejection under 35 USC 102(b) and 35 USC §103(a) is requested.

VI. Conclusion.

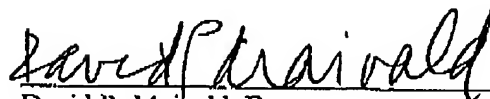
It is respectfully submitted that the present application is in condition for allowance. If the patent examiner would like to suggest changes of a formal nature to place this application in better condition for allowance, a telephone call to Applicants' undersigned attorney would be appreciated.

Respectfully submitted,

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